REMARKS

In the final Office Action[1] mailed July 15, 2009, the Examiner rejected claims 1, 3, 4, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern et al. (U.S. Publication No. 2004/0011650, hereafter "Zenhausern") in view of Nikiforov et al. (U.S. Patent No. 7,060,171, hereafter "Nikiforov"); rejected claims 8-12 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov and further in view of Lough et al. (U.S. Patent No. 5,900,481, hereafter "Lough"); and rejected claims 8-13 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov and further in view of Smith et al. (U.S. Patent No. 6,270,970, hereafter "Smith") and Lough. Claims 1, 3, 4, and 6-13 remain pending.

I. THE REJECTION OF CLAIMS 1, 3, 4, 6, AND 7 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER ZENHAUSERN IN VIEW OF NIKIFOROV SHOULD BE WITHDRAWN.

Applicant respectfully traverses the rejection of claims 1, 3, 4, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov.

Claim 1 recites a microchip, comprising:

a first substrate; and

a second substrate connected with the first substrate to define a connecting surface therebetween, the first substrate and the second substrate defining a microchannel in the connecting surface by a first groove part of the first substrate and a second groove part of the second substrate, the first groove part having a first protruding part and the second groove part having a second protruding part, wherein

the microchannel includes a gap part formed by the first protruding part and the second protruding part, the gap part having a sectional size

[1] The final Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the final Office Action.

> variable by a movable protruding part in the first groove part or in the second groove part, the movable protruding part being the first protruding part or the second protruding part. (Emphases added).

Zenhausern and Nikiforov, alone or combined, fail to teach or suggest at least the gap part being formed by the first protruding part and the second protruding part, and having a sectional size variable by a movable protruding part.

A. Zenhausern and Nikiforov, alone or combined, fail to teach or suggest a combination "wherein the microchannel includes a gap part formed by the first protruding part and the second protruding part," as recited in claim 1 and required by claims 3, 4, 6, and 7.

The Examiner acknowledged, "Zenhausern et al . . . does not specifically teach a channel formed between two grooved substrates." Final Office Action at 3, emphasis added. Accordingly, Zenhausern cannot teach or suggest a microchannel including "a gap part formed by the first protruding part [of a first groove part of a first substrate] and the second protruding part [of a second groove part of a second substrate]," as recited in claim 1 (emphasis added).

The Examiner cited Nikiforov to cure the deficiencies of Zenhausern. Final Office Action at 3. Nikiforov, however, fails to cure the deficiencies of Zenhausern.

For example, Nikiforov, at column 8, lines 23-28, states:

> Typically, such devices are fabricated as an aggregate of planar substrate layers, where the channels are fabricated into the surface of one or more of the facing substrates as grooves, wells, or indentations. The mating of one substrate to the other covers the grooves and seals them to form the channels of the device. (Emphasis added).

Accordingly, Nikiforov merely discloses that one or more facing substrates include grooves, which may form channels when one of the substrates mates with the other. Nikiforov does not disclose that the grooves of the mating substrates include any

protrusion part. Accordingly, Nikiforov also cannot teach or suggest a microchannel including "a gap part formed by the first protruding part [of a first groove part of a first substrate] and the second protruding part [a second groove part of a second substrate]," as recited in claim 1 (emphasis added).

For at least these reasons, claim 1 is distinguishable over Zenhausern and Nikiforov. Claims 3, 4, 6, and 7 depend from claim 1 and are distinguishable over Zenhausern and Nikiforov at least due to their dependence.

In view of the above, the rejection of claims 1, 3, 4, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov is improper and should be withdrawn.

B. Zenhausern and Nikiforov, alone or combined, fail to teach or suggest a combination "wherein the microchannel includes a gap part . . . , the gap part having a sectional size variable by a movable protruding part," as recited in claim 1 and required by claims 3, 4, 6, and 7.

The Examiner asserted, "Zenhausern et al disclose a microchip having a microchannel formed in a substrate using known techniques (¶ 48), wherein the microchannel is provided with a gap wherein adjacent sides of the channel (grooved parts) have protruding parts (constrictions) forming the gap wherein the first or second protruding part is movable (i.e., "movable array of constrictions within the channel" ¶ 61 and Fig. 2)." Final Office Action at 3. This is not correct.

Zenhausern, at paragraph [0061], states that "[i]n another embodiment, solidified magnetorheological fluid may be used to form the channel and physical constriction with the capability to create an addressable, movable array of constrictions within a

microfluidic channel," (emphasis added). Further, Zenhausern, at paragraph [0275], states:

> In another embodiment, programmable constriction points are provided. FIG. 6 schematically depicts a concentration module having programmable constriction points. Generally, the microfluidic device 800 comprises a channel 810 supported by a substrate comprising one or more magnetic structures, such as structures 815 and 820 atop electromagnet 830. A top-down view is shown here for simplicity. Magnetorheological [MR] fluid is introduced to the channel through input port 840. The desired magnetic circuit is magnetized, for example circuit 815 to address the appropriate constriction location. In the energized region, the fluid solidifies. Remaining MR fluid is flushed from the channel, through output port 850 leaving the desired channel constriction point in place. (Emphasis added).

Accordingly, Zenhausern merely discloses that, in an alternative embodiment, solidified MR fluid may form constrictions in accordance with magnetic structures 815 and 820, which are illustrated in Figure 6, *not* Figure 2, of Zenhausern. Further, as evident from Figure 6 of Zenhausern, reproduced below, Zenhausern does not disclose that the substrate that supports channel 810 includes a protruding part. Moreover, solidified MR fluid in channel 810 of Zenhausern is not a part of the substrate that supports channel 810.

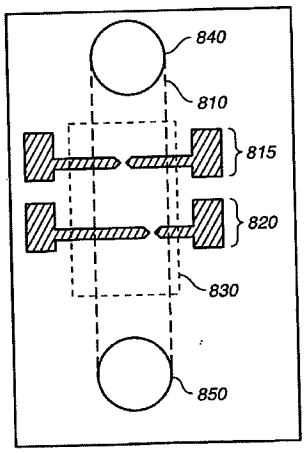

FIG._6

Accordingly, Zenhausern cannot teach or suggest a combination wherein "the microchannel includes a gap part . . . , the gap part having a sectional size variable by a movable protruding part," as recited in claim 1 (emphasis added), because claim 1 requires that "the movable protruding part being the first protruding part [of a first groove part of a first substrate] or the second protruding part [of a second groove part of a second substrate]."

The Examiner cited Nikiforov only as allegedly disclosing a channel formed between grooved substrates. Final Office Action at 3. Accordingly, even assuming the Examiner's characterization of Nikiforov is correct, which Applicant does not concede, Nikiforov still fails to cure the deficiencies of Zenhausern.

For at least these additional reasons, claim 1 is distinguishable over Zenhausern and Nikiforov. Claims 3, 4, 6, and 7 depend from claim 1 and are distinguishable over Zenhausern and Nikiforov at least due to their dependence.

In view of the above, the rejection of claims 1, 3, 4, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov is improper and should be withdrawn.

II. THE REJECTION OF CLAIMS 8-12 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER ZENHAUSERN IN VIEW OF NIKIFOROV AND FURTHER IN VIEW OF LOUGH SHOULD BE WITHDRAWN.

Applicant respectfully traverses the rejection of claims 8-12 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov and further in view of Lough.

Claims 8-12 depend from claim 1 and require all the elements recited in claim 1. As discussed above, Zenhausern and Nikiforov, alone or combined, fail to teach or

suggest a combination wherein "the microchannel includes a gap part . . . , the gap part having a sectional size variable by a movable protruding part," as recited in claim 1 and required by claims 8-12. Lough fails to cure the deficiencies of Zenhausern and Nikiforov. Accordingly, claims 8-12 are distinguishable over Zenhausern, Nikiforov, and Lough.

In view of the above, the rejection of claims 8-12 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov and further in view of Lough is improper and should be withdrawn.

III. THE REJECTION OF CLAIM 8-13 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER ZENHAUSERN IN VIEW OF NIKIFOROV AND FURTHER IN VIEW OF LOUGH AND SMITH SHOULD BE WITHDRAWN.

Applicant respectfully traverses the rejection of claim 8-13 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov and further in view of Lough and Smith.

Claims 8-13 depend from claim 1 and require all the elements recited in claim 1. As discussed above, Zenhausern, Nikiforov, and Lough, alone or combined, fail to teach or suggest a combination wherein "the microchannel includes a gap part . . . , the gap part having a sectional size variable by a movable protruding part," as recited in claim 1 and required by claims 8-13. Smith fails to cure the deficiencies of Zenhausern, Nikiforov, and Lough. Accordingly, claims 8-13 are distinguishable over Zenhausern, Nikiforov, Lough, and Smith.

In view of the above, the rejection of claim 8-13 under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Nikiforov and further in view of Lough and Smith is improper and should be withdrawn.

IV. CONCLUSION.

In view of the foregoing remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: September 18, 2009

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